

ABSTRACT OF THE DISCLOSURE

[70] A method is provided for controlling when a transponder replies to Mode-S interrogation signals. The method includes receiving Mode-S signals containing P5 and P6 pulses. The received P5 and P6 pulses have certain amplitudes. Each P6 pulse contains a sync phase reversal (SPR) signal followed by a data segment containing Mode-S data. The P5 pulse is asynchronous with respect to the P6 pulse and the P5 pulse is timed to overlay the SPR signal. The method further includes, analyzing each P5 and corresponding P6 pulse, and identifying the SPR signal correctly in at least 99% of the received Mode-S signals in which the amplitude of the P6 pulse is at least 12 dB greater than the amplitude of the P5 pulse and in no more than 2% of the received Mode-S signals in which the amplitude of the P6 pulse is at least 3 dB less than the amplitude of the P5 pulse, and replying to the Mode-S signals for which the SPR signal is correctly identified. Optionally, the transponder may analyze each interference pulse and a corresponding P6 pulse sufficiently to identify the SPR signal correctly in at least 95% of the received Mode-S signals in which the amplitude of the P6 pulse is at least 6 dB greater than the amplitude of the interference pulse. Optionally, the analyzing step shall be sufficient to identify the SPR signal correctly in at least 65% of the received Mode-S signals in which the amplitude of the P6 pulse is at least 3 dB greater than the amplitude of the interference pulse.